

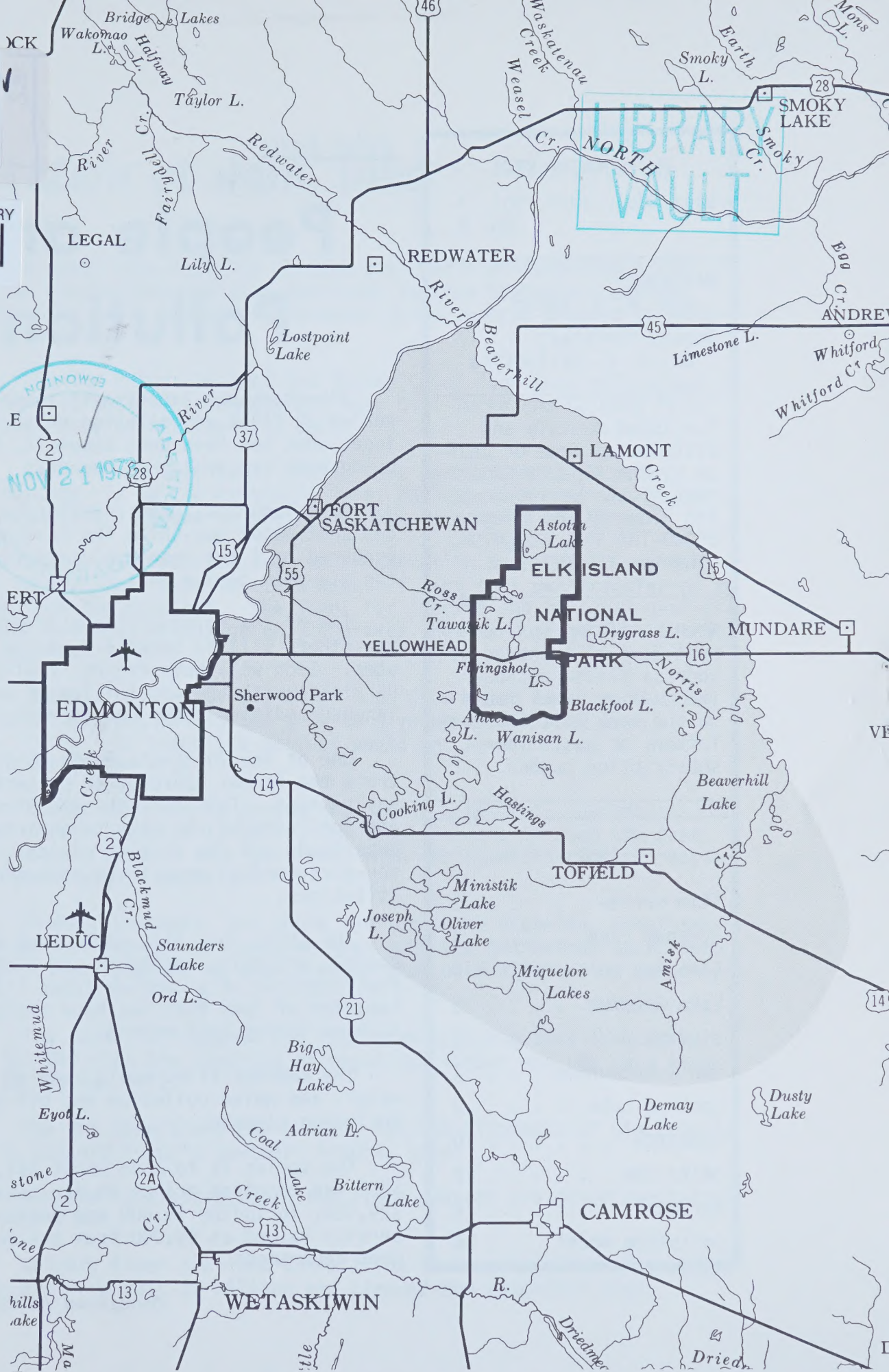
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STUDY AREA - COOKING LAKE

ENVIRONMENT NEWS

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Minister:
Hon. W. J. Yurko
Deputy Minister:
Dr. E. E. Ballantyne

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Film Series

People and Pollution

Albertans can expect next summer a series of films on pollution in the province, what has been done about it, what is being done and what they can do.

Save Tomorrow, Oppose Pollution (STOP) has shot about one-third the footage and prepared half the research and script for the six-film series.

Two of the films will run 20 minutes and the others will be between four and six minutes. Each will have French, English and Ukrainian with the possibility of an Indian-language edition being considered.

One of the 20-minute films will illustrate the formal approach to protecting the environment. This includes the structure and functions of the Alberta environment department and the role of cities, towns, non-governmental groups and educational institutions.

The other long film would look at the social, economic, aesthetic and biological ramifications of a complex issue like reclamation of land that has been stripped, such as during coal mining.

The shorter films would look at air, water, and noise pollution and oil spills, including cleanup.

The series is to cost about \$51,000 and STOP has received grants so far totalling \$29,500, including \$9,000 and helicopter service valued at \$9,000 from the environment department.

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Dedication at dam, lake

A small rock cairn at Abraham Lake and a 20-foot-high steel monument at the Bighorn Dam were dedicated in late September, marking completion of a joint industry-government hydroelectric project in west-central Alberta.

Premier Peter Lougheed and Stoney Chief John Snow officiated at the monument while environment minister Bill Yurko and Calgary Power Ltd. representatives unveiled the cairn.

The name Abraham Lake, chosen in a contest among Alberta school children, is to the memory of Silas Abraham, a Stoney who lived with his family and hunted in the region now covered by the lake.

The ceremonies included the presentation by Premier Lougheed to Chief Snow of the title to 1,280 acres of land that was transferred to the tribe from the province. The land, for "sacred and cultural use" is the site of two rebuilt cabins and 20 graves that were moved from the flooded region.

During the dedication, Chief John Snow noted the construction of the dam forced natives in the area to give up established ways of making a living. He hoped the natives would get equal chance at new opportunities in the area.

"Today the road is paved, the dam is completed, the lake is formed, a service station is built, the tourists come through the area, the fur and game animals have gone back into the mountains and my people at the Bighorn are on welfare."

Premier Lougheed, who spoke earlier, said Albertans benefited from the dam but recognized "when we take away the historical background and land of these people, we must present them with alternative opportunities."

The earth-filled dam, 300 feet high by 1,400 feet long, was started in 1969 with the clearing of brush and timber and the lake began forming in August, 1972.

The two generators can produce 108,000 kilowatts of electricity for use in Calgary Power's southern Alberta grid.

The dam is also valuable for flood control and other regulation of the river flow.

Calgary Power provided \$38 million for construction of the dam while the province paid \$5 million and cleared the reservoir area.

Noise is where you hear it - - everywhere

Edmonton is a noisy place and some areas of the city appear destined to remain that way.

That is the general conclusion of a noise survey conducted last year by Bolstad Engineering Ltd. and recently released by environment minister Bill Yurko.

The survey measured noise levels in representative areas of the city and collected public opinion on the noises found most annoying.

The citizen's major concern was the roar along truck routes and major roads while the aircraft traffic through the industrial airport was the second concern.

The sounds from the Calder switching yards of Canadian National Railways were third.

The report said the obvious conclusion "is that heavy traffic, which grows in volume every year, has been permitted to encroach far too heavily on residential areas--or conversely, residential areas have been permitted to develop too closely to traffic arteries, railroads and industrial areas without the requirement of special construction or barriers to offset the problem."

"...it is likely that little can be done to alleviate the existing situation without considerable expense. Recommendations can, however, be given to control noise in redevelopment and new development areas."

Recommendations included:

- reassessment of zoning along major roadways.
- use of noise buffers to protect residential areas near traffic zones.
- modification of building codes to require soundproofing where noise control is not practical.
- analysis of transportation systems to reduce noise.
- a program to reduce noise from aircraft at the Industrial airport.
- a public education program on how citizens can reduce noise.

For the survey, 39 representative areas or cells of the city were chosen and noise measurements conducted in 31 of them. Public opinion was sampled in 37 of the cells.

The report said the daytime average noise level exceeded 10 per cent of the time was about 63 decibels*, or a bit noisier than an office with typewriters. At night, the level was between 56 and 60 decibels.

A noise survey in Vancouver showed a night level of 55 decibels and a day average to 62 to 64 in 1971.

Although Edmonton is in the same general range as Vancouver the Bolstad report noted "the high levels recorded along the periphery of many Edmonton residential areas almost equals the average levels for commercial districts in Vancouver."

The results of a similar noise survey in Calgary are expected later this year.

** The decibel is a measure of the fluctuation of air pressure associated with sound. Zero decibels is the point at which the human ear begins to pick up sound, 20 decibels is equivalent to a quiet room or the rustle of leaves, 40 an average home or office, 60 an office with typewriters, 80 a noisy street corner, 100 a jet aircraft taking off half a mile away and 130 is where pain begins.*

Towers and ponds favored for Lake Wabamum cooling

Three different approaches, including further research, have been suggested to maintain and improve the recreational qualities of Lake Wabamum, about 40 miles west of Edmonton.

The alternatives were outlined in a report that consulting engineers Reid, Crowther and Partners Ltd. of Calgary prepared for environment minister Bill Yurko.

The best solution for disposal of warm water from two Calgary Power Ltd. generating plants was to build cooling facilities rather than return the water to the lake as now occurs.

The other approach would be to continue the weed-harvesting program in the lake and continue the warm-water discharge.

The lake is a prime recreation area but weed growths, particularly near the Wabamum power plant, are interfering with boating and swimming.

The report noted weeds have always grown in the lake but attributed the proliferation of the species Elodea, which causes the boating and swimming problems, to the thermal discharges. The warm water also caused the weeds to grow earlier in the year meaning they broke off and washed ashore in late summer rather than autumn.

The power plants, which currently produce 882 megawatts, are being expanded to 1,932 megawatts by 1977. When completed they will circulate water at more than 2,000 cubic feet a second for cooling purposes. The water temperature would rise about 17 degrees.

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Data collection toughest phase

The gathering of basic information is the most difficult aspect of any classroom studies of environmental problems, says Prof. John Marean of the University of Calgary education faculty.

Meaningful studies not only require local and current information but that it also be collected from a variety of sources to cover all factors of a problem.

Mr. Marean said the inaccessibility of information became abundantly clear in a summer session course--Environmental Studies in the School Curriculum--offered by the university for teachers.

"It is important for those who plan any kind of worthwhile environmental study to recognize that this problem exists and they may find that the gathering of necessary data is at least as difficult as the processing of the data if or when they can be obtained.

Students in Prof. Marean's course were given a pre-session assignment of conducting a growth study on some factor of their natural, social or industrial environment and many reported difficulty in obtaining data.

In some cases, such as the number of prescriptions written for birth-control pills, the information would not be released for such studies, if it exists at all.

In others, agencies were unable to provide the information in the form requested, such as the number of automobiles registered in a particular area.

Prof. Marean said the studies are useful for teachers to learn about the rates of growth and to gain experience in conducting a growth study.

"Such studies are considered valuable for students in at least the last six years of their school experience and many meaningful studies can be conducted by younger students."

An outline of the study assigned Prof. Marean follows:

It will require the graphing of data and the analysis of graphs to determine the nature of the change represented. Study a pattern of relationships in which there has been relatively consistent growth over the period studied. Try to identify a system which is representative of your area and available for you to study personally.

In gathering data, study it and report your interpretations:

- Identify the system studied.*
- Gather statistical data which will give the annual rate for that quantity. Although information can probably be gathered from a single agency, see how much there is through your telephone book.*
- Organize the data in a meaningful way, such as a table in sequential order.*
- Prepare a graph, preferably a line graph, which will show the variation of the element over the time studied.*
- Analyze the growth of the element by studying the data and graph(s). Relate the change to the forces which caused them. In addition to short-term changes, look for trends that represent the growth of that element.*
- Extrapolate the graph to predict the value of the element studied at some future date. Qualify your projection in terms of factors which you believe will influence the rate of change.*

Man and Resources approaching finish

The Man and Resources program concludes its second phase next month with a conference for delegates from across Canada to hammer out policy guidelines on 12 major resource issues.

About 60 persons from Alberta, including 21 delegates who represent a cross section of the population, are to attend the conference Nov. 18-22 in Toronto.

The program was conceived in 1968 and promoted by the Canadian Council of Resource and Environmental Ministers.

The objective is to provide guidelines for government policy to achieve and sustain an optimum balance of social, ecological and economic benefits from natural resources.

A process of public participation was used in which groups at the community levels identified issues of concern. These were refined at provincial conferences with a national conference at Montebello, Que., last year giving priority to 12 main areas.

A repeat of the public-participation process produced papers and opinions on these areas with subsequent reports co-ordinated by regional and national task forces.

Each delegate has been given the national report on each issue and is to participate in small groups before the large final plenary session, which will refine the guidelines evolved in the groups.

The Alberta delegates are eager for provincial reaction to the guidelines and are willing to initiate community involvement.

Water drops so does use

New study to seek Cooking Lake remedy

A two-year study of the Cooking Lake watershed to conserve and enhance its resources has been undertaken by the environment department.

The study is aimed at making the region an "environment management area" and is the result of concern over declining water levels in district lakes.

Environment minister Bill Yurko, who announced the study, said it would examine the social, economic and environmental aspects of the district and recommend improvements.

The principal lakes involved are Cooking, Hastings, Miquelon, Ministik and Beaverhill, all in the 1,500-square-mile watershed that borders on Edmonton's eastern outskirts.

These lakes are used for recreational purposes by the people of the region and Edmonton. Cooking and Hastings are two of the most developed and Miquelon has a provincial park. The area also includes Elk Island National Park.

Water levels in the various lakes have dropped between two and 16 feet during the last 30 years. Cooking Lake dropped three feet from May, 1956, to May, 1971.

The decline has been correlated with slightly rising temperatures and dropping precipitation in the area.

Similar correlations have been made for other Alberta lakes, such as Gull and Sylvan, where water levels have declined although the correlations are not the same in each case.

Land use is another factor which could be involved in the water loss but the influence of activities such as tree cutting and road building has not been determined.

Residents of the region have expressed anxiety over the water levels for several years and in 1970 a petition from more than 600 citizens near Cooking and Hastings Lakes was presented to the government seeking action to save the lakes.

Various studies have been undertaken and one by EPEC Consulting Ltd. of Edmonton found it was feasible to pump water from the North Saskatchewan River to restore Cooking and Hastings Lake at a cost of \$4.4 million. At a higher cost, water could be pumped through a chain of connected lakes to Miquelon and eventually into Cooking and Hastings.

In 1970 the Environment Conservation Authority (ECA) held public hearings into the immediate area of Cooking and Hastings Lakes, but the hearings were expanded to include the whole watershed because of concerns expressed at the hearing.

However, the remedy may not be so simple as to raise the levels of all lakes. Residents around Hastings were concerned that raising the level at Cooking Lake, which flows into Hastings would cause flooding at the second lake, which has dropped less.

The situation is different further downstream at Beaverhill Lake. The low water level has exposed large areas of land which have been put to productive agriculture use; increased levels would make the lands inaccessible.

The lake is also recognized as an important waterfowl production area.

The formation of the Cooking Lake Moraine Management Committee was a result of recommendations by the ECA that extensive studies be started as soon as possible. The need for fast action in restoring levels was emphasized at the hearings.

The management committee includes representatives of local governments, the City of Edmonton, wildlife and agricultural groups, several provincial government departments and boards, the national and historic parks branch and the Electric Utility Planning Council.

A technical task force appointed by the committee is to first study ways of augmenting water supplies, which is basic to any other considerations.

At least two years of study by some experts, such as biologists, is needed to get an accurate picture of plant and animal activity in the region.

Industry asked to help funding

The Alberta Environmental Research Trust, formed by the legislature in 1971 and funded with \$200,000, has decided to approach industry for additional money.

Stuart Smith, secretary of the trust, said that in the last two months requests for research grants have exceeded the trust's original \$200,000 by more than \$1 million.

The trust disburses funds to individuals, industry and educational institutions to further research into improving environmental conditions or preventing deterioration.

Dr. Smith said the trust would initially seek finances from Alberta-based industries which have a continuing impact on or concern for the environment. These would include petroleum companies and forestry firms.

The trustees have yet to decide whether they will accept funds designated for specific projects or whether money should be received only for general distribution.

The trust has approved grants totalling \$246,188 for 14 different studies with more than half the money going to research related to the petroleum industry.

The grants include \$54,250 to the Whitecourt Environmental Study Group, an eight-company consortium of natural gas processors, to study the effect of sulphur dioxide on vegetation. The trust grant is matched by an equal amount from the companies.

M.B.M. Research Ltd., a private consulting firm, has been given \$46,332 to study the recycling of cellulose products.

The smallest grant was \$1,650 to Dr. J. B. McQuitty of the University of Alberta for work on odor control of pig wastes. The Alberta Hog Marketing Board provided an equal amount.

Before the eight trustees decide to allocate funds, a researcher has to give a detailed proposal and win majority approval from the trustees.

A condition of each grant is that five per cent of any royalty or patent arising from the research must be assigned to the trust.

The trust receives administrative services from the environment department's research secretariat of which Dr. Smith is the chairman. The secretariat also coordinates research projects funded by the trust and the secretariat but they gather and disburse funds separately.

The secretariat has been increasing its activities since spring and although staffing with research scientists is not completed, several programs are underway or planned.

Two of the main studies involve the Athabasca Tar Sands. National Engineering, Design, and Planning, and Computation Co. Ltd. has been awarded a \$20,000 contract by the secretariat to investigate the problems of clarifying the tailings pond waters from oil sands extraction plants.

Tailing disposal and reclamation of the mined area are two of the largest environmental problems for the oil sands industry.

The secretariat is also discussing with the Athabasca Tar Sands Environmental Study Group, formed by 20 corporations with an interest in the sands, possible research into the hydrology and climatology of the sands area.

One of the objectives is total integration of research by the federal and provincial governments, industry, universities, the Alberta Research Council and private consultants.

Environment Minister Bill Yurko has given a high priority to environmental research into the sands, located in the Fort McMurray region 250 miles northeast of Edmonton.

Lake Wabamum cooling

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The report said the best way of cooling water for the Sundance plant, across the lake on the south shore from the Wabamum generators, would be to construct a 650-acre cooling pond at a cost of \$31,200,000. Additional cooling facilities, preferably sprays or a cooling tower, would have to be added as the plant expanded to its maximum size.

A cooling tower would be the best manner in which to dissipate heat from the Wabamum plant. It would cost \$10,300,000.

To counteract evaporation losses from the cooling, a \$6,900,000 pipeline would have to be built 8.5 miles to the North Saskatchewan River to bring in 70 cubic feet of water a second.

Such a pipeline would also be needed if warm water was discharged into the lake, again because of evaporation. However, with such discharges, weed growth would continue and warm water could reach whitefish spawning beds, killing eggs.

A warm recreation pond that could be used year round warranted further consideration.

Public hearings

Delta dam eyed

The concept of a submerged dam to restore water levels in the Peace-Athabasca delta has received general support at public hearings into a proposal to build such a dam.

The hearings were held jointly by the Alberta Environment Conservation Authority, and federal and Saskatchewan representatives, in Fort Chipewyan, near the delta; Uranium city, Sask., and Edmonton.

Licence sets Agrimart standards

A five-year licence under the Alberta Clean Air Act to operate the Agrimart livestock centre in northeast Calgary has been granted by the provincial environment department.

The licence, to Alberta Livestock Co-operative Ltd., sets standards which must be met to keep obnoxious odors at a minimum and deter the gathering of birds.

Odors and the possibility of birds interfering with aircraft from the nearby airport were two objections raised by area residents who did not want the Agrimart built.

Area residents opposed the centre for nearly a year before they and developers agreed on the current site which is about one mile further from their homes than the original location.

The licence requires the sales building be kept under a negative air pressure--to prevent odors from escaping--with ventilation sufficient to provide at least two air changes an hour and in some parts of the building, such as sewage treatment and hog areas, up to eight changes hourly.

Exhaust gases are to be treated with ozone, to destroy odors, and ozone destructors are to be installed if needed to prevent excessive ozone concentrations.

Feed and waste materials are to be kept in closed areas, to avoid attracting birds, and waste is to be removed daily.

If strong or offensive odors are detected frequently, the company can be required to conduct an odor survey and report the findings to the director of standards and approvals, environment department.

Many of the presentations raised questions about the operation of the dam and one group suggested a more elaborate, and expensive, structure to allow greater control over water levels.

A \$1-million rock weir has been proposed for the Riviere des Rochers, the main outlet channel from Lake Athabasca to the Slave River. For several reasons, no control gates were planned.

However, the joint federal-Saskatchewan-Alberta task force which proposed the dam now is considering provision to allow control gates to be added later, if necessary.

The group which suggested the more sophisticated structure included scientists who were among the first to draw attention to the delta's problems.

They said that without a variable control mechanism the dam could not produce, to the same extent as before 1968, the alternating floods and droughts throughout the 1.5-million-acre delta that have been the key to its high productivity.

The scientists, at the Edmonton hearing, included Dr. W. A. Fuller, zoology department chairman at the University of Alberta; agricultural economist Dr. W. M. Schultz of the university and civil engineer Dr. Rolf Kellerhals. They all noted delta problems in 1969.

Dr. Schultz said that because numerous questions about the delta are unanswered, the best solution to the problem would be a variable dam that could be adapted to changing conditions.

Frank Forbes of Ottawa, chairman of the task force which proposed the dam, said the ungated structure was the best minimum approach.

Smaller dams and drainage ditches could be built throughout the delta to improve local wildlife habitat.

The chief objection to a gated structure would be the difficulty in getting agreement on how the dam should be operated.

Reg Bailey, assistant deputy minister for planning and research in the Alberta environment department, explained that optimum conditions for waterfowl were not necessarily the same as those for muskrat while both could be different from those for fish. Which optimum condition do you choose in controlling the water level?

Predicting precisely what water levels would occur in the delta, to compensate for the effect of the W. A. C. Bennett dam, would be nearly impossible.

The dam, 750 miles upstream on the Peace River, has been blamed for the reduction of spring flood levels on the Peace and the decline of delta levels. When the Peace was in flood, it produced a water dam that stopped the outflow from Lake Athabasca and resulted in lake levels rising and flooding of the delta.

Overcast, calm risk of smog

Future forecast?

Instead of the news, weather and sport on the evening news cast it may soon be news, weather, pollution forecast and sports.

Far fetched? A bit, but not entirely outside the realm of possibility.

The environment department is in the final process of selecting a contractor to produce a mathematical model of air pollution for the cities of Calgary and Edmonton.

Randy Angle, a meteorologist with the air quality control branch, said the model would have a variety of uses ranging from predicting what pollution levels might occur under tomorrow's weather conditions to what the general, long-term effect might be of a new highway or industrial plant.

The model is essentially a formula that, given the existing or expected weather conditions, would produce a forecast on pollution.

Each city would be modelled at least for carbon monoxide, all nitrogen oxides, ice fog, 16 different wind directions, various wind speeds and atmospheric stability.

Mr. Angle said developing such a model is complicated by the difficulty in getting precise measurements on the physical processes that occur in the atmosphere.

Measurement of temperature gradients from ground level to well above the city can be conducted on radio towers but other processes such as how quickly air currents are rising are not so easily determined.

Temperature inversions, with few rising air currents, are common in winter but not so regular in summer.

One of the greatest complicating factors is that forecasting weather on a small scale, such as for the specific area of a city like Edmonton or Calgary, is not highly accurate.

The model is to be developed from existing weather and pollution information and is to be initially tested for accuracy using existing facilities to measure temperature, wind and air quality.

Given favorable results, an intensive study would be undertaken for a more intensive measurement of pollutant concentrations in conjunction with wind and temperature variations.

Mr. Angle said a successful model would also be able to indicate the best procedures to follow in alleviating excessive pollution, whether it be closing a refinery, a power station or reducing the number of vehicles for a given period.

The model could also be used in city planning to show the best places for future industry development or residential subdivisions.

The best location for measuring air quality and weather conditions, the degree of pollution control measures could also be indicated.

A request for proposals was issued during the summer and selection of a contractor is expected shortly.

pollution films

Continued from Page 2

Paul McGaffey, who is producing and directing the series for STOP, said the films would have a positive theme--that individuals have been able to do something about pollution, along with government and industry.

Although Alberta has a good record in this field, partly because of low population and not much industrialization, residents have to guard against becoming complacent.

"People should be heartened anew that their own personal clout is getting things done."

The films would be distributed free throughout the province with heavy emphasis on rural areas which are often left out of environmental issues, Mr. McGaffey said. Plans also call for distribution over cable television.

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